Claims

[c1] *[c1]* What Is Claimed Is:

1.An antenna adapted for a logging tool, comprising:

a core;

the core including an electrical conductor disposed thereon such that the antenna has a first magnetic dipole moment substantially perpendicular to a longitudinal axis of the core.

[c2] 2.The antenna of claim 1 wherein the antenna is adapted to transmit or receive electromagnetic energy.

[c3] 3.The antenna of claim 2 wherein the core consists of a dielectric material.

[c4] 4.The antenna of claim 3 wherein the conductor is disposed on the outer surface of the core.

[c5] 5.The antenna of claim 4 wherein the conductor is plated onto the core.

[c6] 6.The antenna of claim 5 wherein the core includes an arcuate shaped outer surface.

[c7] 7.The antenna of claim 6 wherein the core forms a surface of revolution.

[c8] 8.The antenna of claim 7 wherein the core forms a cylinder having open ends.

[c9] 9.The antenna of claim 4 wherein the conductor consists of a conductive material deposited on the core.

[c10] 10.The antenna of claim 9 wherein the core includes an arcuate shaped outer surface.

[c11] 11.The antenna of claim 10 wherein the core forms a surface of revolution.

[c12] 12.The antenna of claim 11 wherein the core forms a cylinder having open

[c13] 13.The antenna of claim 4 further comprising a second electrical conductor disposed on the core such that the antenna has a second magnetic dipole moment substantially perpendicular to the longitudinal axis of the core.

[c14] 14.The antenna of claim 13 wherein the second magnetic dipole moment is substantially perpendicular to the first magnetic dipole moment.

[c15] 15.The antenna of claim 13 wherein the second conductor is plated onto the core.

[c16] 16.The antenna of claim 13 wherein the second conductor consists of a conductive material deposited on the core.

[c17] 17.The antenna of claim 13 further comprising another independent electrical conductor disposed on the core, the conductor adapted to alter the first or second magnetic moment.

[c18] 18.The antenna of claim 17 wherein the independent conductor forms a closed loop.

[c19] 19.The antenna of claim 17 wherein the independent conductor forms a disk.

[c20] *[c2]* 20.A well logging tool comprising:
a support having at least one antenna mounted thereon; and
electrical circuitry coupled to the at least one antenna,
wherein the at least one antenna comprises a dielectric core, the core having an electrical conductor disposed thereon to form a conductive path, the conductive path arranged to have a first magnetic dipole moment substantially perpendicular to a longitudinal axis of the core.

[c21] 21.The logging tool of claim 20 wherein the antenna is adapted to transmit or receive electromagnetic energy.

[c22] 22.The logging tool of claim 21 wherein the conductor is plated onto the core.

[c23] 23.The logging tool of claim 22 wherein the core forms a surface of revolution.

[c24] 24.The logging tool of claim 23 wherein the core forms a cylinder having open ends.

[c25] 25.The logging tool of claim 21 wherein the conductor consists of a conductive material deposited on the core.

[c26] 26.The logging tool of claim 25 wherein the core forms a surface of revolution.

[c27] 27.The logging tool of claim 26 wherein the core forms a cylinder having open ends.

[c28] 28.The logging tool of claim 20 further comprising a second electrical conductor disposed on the core to form a conductive path, the conductive path arranged to have a second magnetic dipole moment substantially perpendicular to the longitudinal axis of the core.

[c29] 29.The logging tool of claim 28 wherein the second magnetic dipole moment is substantially perpendicular to the first magnetic dipole moment.

[c30] 30.The logging tool of claim 28 wherein the second conductor is plated onto the core.

[c31] 31.The logging tool of claim 28 wherein the second conductor consists of a conductive material deposited on the core.

[c32] 32.The logging tool of claim 28 further comprising another independent electrical conductor disposed on the core, the independent conductor adapted to alter the first or second magnetic moment.

[c33] 33.The logging tool of claim 32 wherein the independent conductor forms a closed loop.

[c34] 34.The logging tool of claim 32 wherein the independent conductor forms a disk.

[c35] 35.The logging tool of claim 21 wherein the support is adapted for disposal within a well bore on one of a wireline, a drill collar, or coiled tubing.

[c36] 36.A method of producing an antenna for a logging tool, comprising:
(a) disposing an electrical conductor on a dielectric core, the conductor forming a conductive path arranged to have a first magnetic dipole moment perpendicular to a longitudinal axis of the core; and
(b) adapting the electrical conductor to be coupled with independent circuitry.

[c37] 37.The method of claim 36 wherein the antenna is adapted to transmit or receive electromagnetic energy.

[c38] 38.The method of claim 37 wherein step (a) comprises plating the conductor onto the core.

[c39] 39.The method of claim 38 wherein the core forms a surface of revolution adapted to be placed in juxtaposition with a curved surface.

[c40] 40.The method of claim 39 wherein the core forms a cylinder having open ends.

[c41] 41.The method of claim 37 wherein step (a) comprises depositing a conductive material onto the core to form the conductor.

[c42] 42.The method of claim 41 wherein the core forms a surface of revolution adapted to be placed in juxtaposition with a curved surface.

[c43] 43.The method of claim 42 wherein the core forms a cylinder having open ends.

[c44] 44.The method of claim 36 further comprising disposing a second electrical conductor on the core such that the antenna has a second magnetic dipole moment substantially perpendicular to the longitudinal axis of the core.

[c45] 45.The method of claim 44 wherein the second magnetic dipole moment is substantially perpendicular to the first magnetic dipole moment.

[c46] 46.The method of claim 44 wherein disposing the second conductor comprises plating the conductor onto the core.

[c47] 47.The method of claim 44 wherein disposing the second conductor comprises depositing a conductive material onto the core to form the conductor.

[c48] 48.The method of claim 44 further comprising disposing another independent electrical conductor on the core, the conductor adapted to alter the first or second magnetic moment.

[c49] 49.The method of claim 48 wherein the independent conductor forms a closed loop.

[c50] 50.The method of claim48 wherein the independent conductor forms a disk.